What is claimed is:

1. A voltage controlled oscillator comprising:

a tank circuit;

a first pair of cross-coupled transistors to receive a first current from the tank circuit; and

a second pair of cross-coupled transistors to receive a second current from the tank circuit, wherein the first and second currents are unequal.

2. The voltage controlled oscillator of claim 1 wherein the first pair of cross-coupled transistors comprises bipolar junction transistors, and the second pair of cross-coupled transistors comprises isolated gate transistors.

3. The voltage controlled oscillator of claim 2 wherein the second current is greater than the first current.

4. The voltage controlled oscillator of claim 2 wherein the first current is large enough for the cross-coupled pair of bipolar junction transistors to satisfy a startup condition of the voltage controlled oscillator.

5. The voltage controlled oscillator of claim 1 wherein the first and second pairs of cross-coupled transistors are manufactured in a SiGe process.

6. The voltage controlled oscillator of claim 1 wherein the first pair of cross-coupled transistors exhibits a phase noise substantially proportional to current, and the second pair of cross-coupled transistors exhibits a phase noise substantially proportional to transconductance.

7. The voltage controlled oscillator of claim 6 wherein the second current is larger than the first current.

8. An apparatus comprising:

a first gain device having a first transconductance value;

a first current source to provide a first current to the first gain device;

a second gain device having a second transconductance value lower than the first transconductance value;

a second current source to provide a second current to the second gain device, the second current being larger than the first current; and

a load circuit coupled to the first and second gain devices.

9. The apparatus of claim 8 wherein the first gain device comprises a cross-coupled pair of bipolar junction transistors.

10. The apparatus of claim 9 wherein the second gain device comprises a cross-coupled pair of isolated gate transistors.

11. The apparatus of claim 10 wherein the load circuit comprises a tank circuit.

12. The apparatus of claim 8 wherein the first gain device exhibits a phase noise substantially proportional to the first current.

13. The apparatus of claim 12 wherein the second gain device exhibits a phase noise substantially proportional to the second transconductance.

14. A frequency synthesizer comprising:

a comparison circuit to compare a reference signal and a frequency divided signal;

a prescaler to divide a frequency of an output signal and produce the frequency divided signal; and

a voltage controlled oscillator to synthesize the output signal in response to the comparison circuit, the voltage controlled oscillator including a cross-coupled pair of bipolar junction transistors and a cross-coupled pair of isolated gate transistors coupled to a tank circuit.

15. The frequency synthesizer of claim 14 wherein the voltage controlled oscillator further includes a first current source coupled to the cross-coupled pair of bipolar junction transistors to provide a first current, and a second current source coupled to the cross-coupled pair of isolated gate transistors to provide a second current.

16. The frequency synthesizer of claim 15 wherein the second current is larger than the first current.

17. The frequency synthesizer of claim 15 wherein the first current is sized to satisfy a startup condition of the voltage controlled oscillator.

18. The frequency synthesizer of claim 17 wherein the second current is sized so a sum of the first and second currents satisfy an output voltage condition.

19. An electronic system that includes a direct conversion receiver with an oscillator input port, a directional antenna coupled to the direct conversion receiver, and a frequency synthesizer coupled to the oscillator input port, the frequency synthesizer comprising:

a comparison circuit to compare a reference signal and a frequency divided signal;

a prescaler to divide a frequency of an output signal and produce the frequency divided signal; and

a voltage controlled oscillator to synthesize the output signal in response to the comparison circuit, the voltage controlled oscillator including a cross-coupled

pair of bipolar junction transistors and a cross-coupled pair of isolated gate transistors coupled to a tank circuit.

20. The electronic system of claim 19 wherein the voltage controlled oscillator further includes a first current source coupled to the cross-coupled pair of bipolar junction transistors to provide a first current, and a second current source coupled to the cross-coupled pair of isolated gate transistors to provide a second current.

21. The electronic system of claim 20 wherein the second current is larger than the first current.

22. The electronic system of claim 20 wherein the first current is sized to satisfy a startup condition of the voltage controlled oscillator.

23. The electronic system of claim 22 wherein the second current is sized so a sum of the first and second currents satisfy an output voltage condition.

24. A method comprising:

providing a first current to a pair of cross-coupled bipolar junction transistors;

providing a second current a pair of cross-coupled metal oxide semiconductor field effect transistors;

summing the first and second currents to form a third current; and

providing the third current to a tank circuit.

25. The method of claim 24 wherein providing a first current comprises providing an adequate current to satisfy a startup condition.

26. The method of claim 25 wherein the first current is inadequate to satisfy an output amplitude condition.

27. The method of claim 26 wherein providing a second current comprises providing an adequate current for the third current to satisfy the output amplitude condition.